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COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS

Sub-Committee of Experts on the
Transport of Dangerous Goods

REPORT OF THE SUB-COMMITTEE OF EXPERTS ON ITS NINTH SESSION
(Geneva, 4 - 15 July 1994)

Addendum 2

Annex 2

REPORT OF THE WORKING GROUP ON THE RATIONALIZATION OF THE MANUAL OF TESTS AND CRITERIA

Part I: General Introduction, Part I of the Manual and Appendices

Introduction

1. A working group was established from 5 to 8 July 1994 to develop further the General Introduction and Part I of the draft rationalized Manual of Tests and Criteria proposed by the expert from the United Kingdom in document ST/SG/AC.10/C.3/R.474, which was prepared on the basis of discussions at:

an inter-sessional working group held at BAM in March 1993 (see document ST/SG/AC.10/C.3/R.366);

the seventh session of the Sub-Committee (see document ST/SG/AC.10/C.3/14, paragraphs 5 to 19 and annex 1); and

the eighth session of the Sub-Committee (see document ST/SG/AC.10/C.3/16, paragraphs 6 to 14, 25 to 34 and annex 1).

The terms of reference of the group were limited by the Sub-Committee to an editorial review and rationalization of the General Introduction, Part I, the relevant appendices to the manual and consequential amendments to the Recommendations. Technical amendments which had been proposed in official documents could also be considered provided they did not change the classification criteria.
The working group was chaired by Mr. Groothuizen and included experts from: Canada, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States and from the European Chemical Industry Council (CEFIC) and the Hazardous Materials Advisory Council (HMAC).

2. The following documents were considered by the working group:

-/C.3/R.367	Technical amendments to Part I (paragraph 5) (UK);
-/C.3/R.382	New Series 1 heating under confinement test (information only) (G);
-/C.3/R.474	General Introduction and Part I of the draft rationalized test manual (UK);
-/C.3/R.475	Parts II and III and the Appendices of the draft rationalized test manual (appendices only) (UK);
-/C.3/R.476	Consequential amendments to the Recommendations (UK);
-/C.3/R.494	Comments on Test Series 6 (India);
-/C.3/R.527	New and revised test methods for Part I (secretariat);
-/C.3/R.529	Revised version of the 6(c) test (editorial improvements only) (secretariat);
-/C.3/R.543	Test results for Test 5(b)(ii) (United States);
-/C.3/R.546	Lead cylinder vs. steel plate for 5(a) test (United States); and
-/C.3/R.547	UN Gap test (United States).

Experts from Canada, Netherlands and the United States provided working papers on the 6(c) test but these were not discussed.

Procedure

3. As the latest version of the draft rationalized manual was available as official documents, -/C.3/R.474 and -/C.3/R.475, it was agreed that the working group should produce a narrative report and annexes giving the proposed text amendments to these documents and to the Recommendations. Annexes A and B give the changes to documents -/C.3/R.474 and -/C.3/R.475 respectively and annex C gives the consequential amendments to the Recommendations.

4. All the text in square brackets has either been agreed or deleted. Minor changes are not discussed in this report but are given in the annexes. This report concentrates on the contentious issues, on the inclusion of new "UN" test methods and on areas where it was considered that additional, clarifying text was necessary.

5. It was agreed that any changes made to test prescriptions in Series 1 and 2 of Part I of the manual should, where appropriate, also be made to the corresponding test prescriptions in Part II.

Section 1: General Introduction

6. No text changes were made although it was recognised that some alterations to Table 1.3 will be required when Part II of the rationalized manual is considered.

Section 10: Introduction to Part I

7. The purpose of the 3(d) test was clarified. After discussion, the screening procedure proposed in document -/C.3/R.367, for the 6(a) test was agreed with some amendments. A new general paragraph, to allow substitution during testing of expensive, non-explosive components in explosive articles, was inserted.

Section 11: Test Series 1

8. There was general agreement that the modified United States Gap test, proposed in annex 1 of document -/C.3/R.527, should be accepted, with some amendments, as the "UN" Gap Test. It was therefore concluded that all the Series 1 type (a) tests, currently given in document -/C.3/R.474, can be deleted. The required text amendments are given in annex A. It was agreed that the performance of a cavitated version of a detonation test was only necessary for energetic liquids being considered for transport in IBCs or tank-containers. A paragraph indicating the link to special provision 26 was inserted in the introduction to the test series and the test prescription was amended accordingly.

9. It was agreed that the time to reaction and duration of reaction in the Koenen test provided useful additional information but that their measurement should not be mandatory.

10. The note proposed in document -/C.3/R.527, warning of potential problems in interpreting Time/Pressure test results on energetic liquids, was accepted with a minor amendment.

Section 12: Test Series 2

11. There was general agreement that the modified United States Gap test, proposed in annex 2 of document -/C.3/R.527, should be accepted, with some amendments, as the "UN" Gap Test. It was therefore concluded that all the Series 2 type (a) tests, currently given in document -/C.3/R.474, can be deleted. The required text amendments are given in annex A. It was agreed that it was not necessary to perform the Series 2 version of the UN Gap test on liquids in the cavitated state, as the 6(a) test is not performed in the cavitated state.

12. The Series 2 versions of the Koenen and Time/Pressure tests were harmonised with those in Series 1.

Section 13: Test Series 3

13. It was agreed that the gap between rollers used in testing liquids in the 3(a)(ii) test should be increased from 1 mm to 2 mm.

14. Minor editorial amendments were made to the descriptions of the Series 3 type (a), (b) and (c) tests.

15. The current description of the 3(d) test was considered to be confusing. It was therefore redrafted and the improved version is given in annex A.

Section 14: Test Series 4

16. Only minor amendments were made to Test Series 4 and an additional, positive result (supplied by the expert from Canada) was inserted in the Examples of Results for the 12 m drop test.

Section 15: Test Series 5

17. The text relating to the use of steel and lead witnesses in the 5(a) test was amended and additional results inserted from document -/C.3/R.546. There was some concern that, as the test results were very dependent on the detonator used, the two standard detonators currently given in Appendix 1 might not be equivalent.

18. The expert from the United States was asked to provide the ASTM specification of the steel used in the 5(b)(ii) test. The Russian Federation was asked to check the changes made to the 5(b)(iii) tests, to provide a specification for the witness plate and to indicate the degree of tube fragmentation which was interpreted as a positive in the Examples of Results.

19. The 5(c) test was harmonised with the revised 6(c) test prescription. The expert from the United States has provided Examples of Results for the 5(c) test. It was noted that no "+" result had been found with a blasting agent and doubts were expressed on the usefulness of the test.

Section 16: Test Series 6

20. Only minor changes were made to tests 6(a) and 6(b).

21. It was agreed that there were some deficiencies in the current criteria for the 6(c) test but it was recognised that the working group had no remit to change these at this time. Improvements to the test prescription were made but only when these did not effect the sentencing criteria. The expert from India had proposed amendments in document -/C.3/R.494 but these were not accepted as they were either overtaken by earlier editorial revisions of the text or involved changes to the test criteria.

Section 17: Test Series 7

22. Only minor amendments were made to Test Series 7.

Appendices

23. The expert from the United States agreed to provide, by the next session of the Committee, a revised specification (for Appendix 1) of the United States detonator.

24. The new Sample Comparison procedure proposed by the United Kingdom was accepted and is included in Appendix 2.

25. The expert from France had supplied a method of cavitation using micro-balloons which is included in Appendix 3.

26. Some amendments were made to the list of National Contacts for Test Details (Appendix 4). The Russian Federation is requested to supply their national contact address.

Consequential amendments to the Recommendations

27. The Preface was amended to reflect the new structure of the manual, as proposed in document -/C.3/R.476.

28. The new paragraph 1.9.2 describing the purpose of the test manual, proposed in document -/C.3/R.476, was accepted.

29. Special provisions 227, 230 and 241 were amended, with slight revisions, as proposed in document -/C.3/R.476.

30. The text of paragraph 4.2.3 was reviewed and the first two sentences only were retained, as the other text is either covered by the new paragraph 1.9.2 or is in the manual.

Actions requested of the Sub-Committee

31. The Sub-Committee is invited to note this report and include it as an annex to the official report. The Sub-Committee is also invited to adopt the proposed text changes to the test manual and the consequential amendments to the Recommendations.

32. The working group has identified problems with the procedures and criteria in the 6(c) test and inconsistencies with the Class 1 definitions in Chapter 1 of the Recommendations. The Sub-Committee is invited to consider making revision of this test a priority in its next work programme.

33. The Secretary has suggested that the rationalized test manual be known as the "Manual of Tests and Criteria". The working group supports this suggestion and invites the Sub-Committee to adopt this.

34. All delegations are requested to provide further test results, particularly where none or few are currently given.

35. The working group believes that it will not be necessary to have a formal working group on the General Introduction and Part I of the manual at the next meeting of the Committee.

Annex A

AMENDMENTS TO DOCUMENT ST/SG/AC.10/C.3/R.474

Delete all square brackets or, where indicated, the text in square brackets, all editorial and technical notes and "mm" where it appears in the diagram, but not the legend, of the figures.

Section 1

No further changes.

Section 10

In 10.3.2.4, amend the text for type 3 (d) to read:

"an ignition test to determine the response of a substance to fire."

Insert a new 10.3.3.5 to read:

"If articles contain expensive, inert, control components, these may be replaced by inert components having a similar mass and volume."

In the first indent of 10.4.2.3, insert "mass" before "explosion".

In 10.4.3.1, amend "sub-section 4.8" to read "the Glossary in Chapter 4".

Replace the text in 10.4.3.5 by:

"10.4.3.5 If a substance gives a "–" result (no propagation of detonation) in the Series 1 type (a) test, the 6(a) test with a detonator may be waived. If a substance gives a "–" result (no or slow deflagration) in a Series 2 type (c) test, the 6(a) test with an igniter may be waived."

Insert a new 10.4.3.7 to read:

"If articles contain expensive, inert, control components, these may be replaced by inert components having a similar mass and volume."

Section 11

In 11.2, delete from the indents "those tests" (three times).

In table 11.1:

delete the entries for tests 1(a)(i) to 1(a)(iv);
renumber test "1(a)(v)" to "1(a)";
for old 1(a)(v), amend the paragraph reference to "11.4.1"; and
renumber test "1(b)(i)" to "1(b)".

In 11.3.1 change "type 1 (a) tests" to "the type 1 (a) test".

Insert a new 11.3.4 to read:

"If a liquid is being considered for transport in tank-containers, or intermediate bulk containers with a capacity exceeding 450 litres, a cavitated version of the type 1 (a) test should be performed (see special provision 26 of Chapter 3 of the Recommendations)."

Delete the text, tables and figures for tests 1(a)(i) to 1(a)(v) and insert the text given in annex 1 to document -/C.3/R.527 with the following amendments:

replace "11.4.5" by "11.4.1" throughout the text (including the sub-paragraph numbers and figure numbers);
in old 11.4.5 change " Test 1 (a) (v)" to "Test 1 (a)";
in old 11.4.5.2.1, change "48 ± 1" to "48 ± 2" and "4.0 ± 0.05" to "4.0 ± 0.1";
replace the text for old 11.4.5.2.2 by:

"The apparatus for liquids is the same as that for solids. When a cavitated version of the test is performed (see 11.3.4), one of the methods of cavitation given in appendix 3 may be used."; and

delete old 11.4.5.3.3.

In 11.5.1 change "Test 1 (b) (i)" to "Test 1 (b)".

In 11.5.1.2.2, change "3.6" to "3.3".

In 11.5.1.3.2, 11.5.1.3.5 and figure 11.5.1.1 add ".0" to the orifice plate diameters where a decimal place is not given.

In 11.5.1.3.3, replace the text in square brackets by:

"The time to reaction and duration of reaction can provide additional information useful in interpreting the results."

In 11.6.1.1, add "*/" after "substances" and insert a new footnote (taken from paragraph 3 of document -/C.3/R.527) to read:

"*/ When testing thermally stable energetic liquids, such as nitromethane (UN 1261), variable results may be obtained because the substance may give two pressure peaks."

In 11.6.1.2.1, amend "BSP" to read "British Standard Pipe (BSP)"

In 11.6.1.2.5, change "*/" to "**/".

In the existing footnote, change "*/" to "**/".

Section 12

In 12.2, delete from the indents "those tests" (three times).

In table 12.1:

delete the entries for tests 2(a)(iii) to 2(a)(iv);
renumber test "2(a)(v)" to "2(a)";
for old 2(a)(v), amend the paragraph reference to "12.4.1"; and
renumber test "2(b)(i)" to "2(b)".

In 12.3.1 change "type 1 (a) tests" to "the type 2 (a) test".

Delete the text, tables and figures for tests 2(a)(iii) to 2(a)(v) and insert the text given in annex 2 to document -/C.3/R.527 with the following amendments:

replace "12.4.3" by "12.4.1" throughout the text (including the sub-paragraph numbers and figure numbers);
in old 12.4.3 change " Test 2 (a) (v)" to "Test 2 (a)";
delete "12.4.3.1 Solids";
in old 12.4.3.2.1, delete "for slids", change "48 ± 1" to "48 ± 2" and "4.0 ± 0.05" to "4.0 ± 0.1".
delete the text, including the heading, of old 12.4.3.2.2;
in old 12.4.3.3.1 and 12.4.3.3.2, delete the text in square brackets;
in the title of old figure 12.4.3.1, delete "(SOLIDS)"; and
delete old figure 12.4.3.2 completely.

In 12.5.1 change " Test 2 (b) (i)" to "Test 2 (b)".

In 12.5.1.2.2, change "3.6" to "3.3".

In 12.5.1.3.2, 12.5.1.3.5 and figure 12.5.1.1 add ".0" to the orifice plate diameters where a decimal place is not already given.

In 12.5.1.3.3, replace the text in square brackets by:

"The time to reaction and duration of reaction can provide additional information useful in interpreting the results."

In 12.6.1.1, add "*/" after "substances" and insert a new footnote (taken from paragraph 3 of document -/C.3/R.527) to read:

"*/ When testing thermally stable energetic liquids, such as nitromethane (UN 1261), variable results may be obtained because the substance may give two pressure peaks."

In 12.6.1.2.1, amend "BSP" to read "British Standard Pipe (BSP)"

In 12.6.1.2.5, change "*/" to "**/".

In the existing footnote, change "*/" to "**/".

Section 13

In 13.2, in the first two indents delete "those tests", in the third indent delete "a test" and replace the fourth indent by "Type (d) for determining the response of the substance to fire."

In 13.4.2.3.2, replace "[1]" by "2".

Replace the last sentence of 13.4.2.4 by:

"Otherwise, the test result is considered "–"."

In 13.4.2.5, delete the entries for "Erythrol tetranitrate (dry)" and "PETN (without wax)".

In figure 13.4.2.5, change "1" to "2".

In 13.4.5.5.2, delete "?".

Replace the last sentence of 13.5.1.4 by:

"Otherwise, the test result is considered "–"."

In 13.5.1.5, delete the entry for "Erythrol tetranitrate (dry)".

In 13.5.3.3.2,

delete "± 0.2 mg" and replace "table 1" by "the following table";
replace "to occur" by "to have occurred" and "flash" by "a flash";
in the last sentence change "Mpa" by "MPa"; and
delete "Table 1." from the heading for table 1.

In the title to 13.5.3.5, change "result" to "results".

Replace the first sentence of 13.6.1.3.1 by:

"***In dealing with a new substance, several screening tests, involving heating small samples at 75 °C for 48 hours, are performed to explore its behaviour.***"

In 13.6.1.5, delete the entry for "72% AN, 12.5% water ...."

Replace the text for test 3(d) by:

"13.7.1 Test 3 (d): SMALL-SCALE BURNING TEST

13.7.1.1 Introduction

This test is used to determine the response of a substance to fire.

13.7.1.2 Apparatus and materials

13.7.1.2.1 Solids and liquids

Sufficient Kerosene-soaked sawdust (approximately 100 g of sawdust and 200 cm^3 of kerosene) is required to make a bed 30 cm x 30 cm and 1.3 cm thick. For substances which do not readily ignite, the thickness is increased to 2.5 cm. An electric igniter and a thin-walled plastics beaker, just sufficient in size to contain the test substance and compatible with it, are also required.

13.7.1.2.2 Alternative method (solids only)

A chronometer and a sheet of Kraft paper of 30 cm x 30 cm, placed on a non-flammable surface, is required. A few grammes of fine smokeless powder and a suitable means of ignition are used as described in the procedure and shown in figure 13.7.1.1.

13.7.1.3 Procedure

13.7.1.3.1 Solids and liquids

10 g of the substance is placed in the beaker. The beaker is placed on, and in the centre of, a bed of kerosene-soaked sawdust and the sawdust is ignited with the electric igniter. The test is performed twice with 10 g of sample and twice with 100 g, unless an explosion is observed.

13.7.1.3.2 Alternative method (solids only)

A conical pile of the substance is placed on the sheet of Kraft paper. (The height of the pile being equal to the radius at the base). A trail of smokeless powder surrounds the pile of substance under test and this trail is ignited, by a suitable source of ignition applied from a safe distance, at two diagonally opposite points (see figure 13.7.1.1). The Kraft paper is ignited by the trail of smokeless powder and transmits the flame to the test substance. The test is performed twice with 10 g and twice with 100 g, unless an explosion is observed.

13.7.1.4 Test criteria and method of assessing results

The event is observed visually and the result is reported as one of the following three categories:

(a) Fails to ignite
(b) Ignites and burns
(c) Explodes.

The duration of the combustion, or the time to explosion, may be noted to provide additional information.

The test result is considered "+" if any explosion of the test samples occurs and the substance is considered to be too dangerous for transport in the form in which it is tested. Otherwise, the test result is considered "–".

13.7.1.5 Examples of results

Substance	Observations	Result
Liquids		
Nitromethane	Burning	–
Solids		
Alternative method		
Blasting gelatin A (NG 92%, cellulose nitrate 8%)	Burning	–
Black powder Pulverin	Burning	–
Lead azide	Explosion	+
Mercury fulminate	Explosion	+

Section 14

Delete 14.3.2.

In 14.4.1.2, replace "ventilation, explosion proof electrical features" by "a fan".

In 14.4.1.3, delete the sentence beginning "In dealing ..".

In 14.5.1.5, replace "(78/2/1)" by "(78/21/1)".

In 14.5.2.5, insert the following positive result supplied by an expert from Canada:

"

Substance of article(s)	Number of drops	Observations	Results
Component (of projectile) containing detonator / primer / fuse assembly	1	Ignition	+

Section 15

In 15.4.1.2, replace the sentence beginning "Below the tube .." by:

"Below the tube is the witness which consists of a 1.0 mm thick 160 x 160 mm steel plate, placed on a steel ring of 50 mm height, 100 mm inner diameter and 3.5 mm wall thickness (see figure 15.4.1.1). Alternatively, a 50.8 mm diameter, 101.6 mm long cylinder of common (soft) lead may be used (see figure 15.4.1.2)."

Replace 15.4.1.4 by:

"The result is considered "+" and the substance should not be classified in Division 1.5 if in any trial:

(a) the witness plate is torn or otherwise penetrated (i.e. light is visible through the plate) - bulges, cracks or folds in the witness plate do not indicate cap sensitivity; or

(b) the centre of the lead cylinder is compressed from its initial length by an amount of 3.2 mm or greater.

Otherwise, the result is considered "–"."

Insert the following results in 15.4.1.5:

Substance	Density (kg/m^3)	Remarks	Results
ANFO (94/6), prills			–
ANFO (94/6), 200 μm			+
AN/methanol (90/10), prilled			–

In figure 15.4.1.1, for "(B)" change "plies" to "plys".

In 15.5.1.5, change "Ammonium nitrate (size 0.85 ..." to "ANFO (AN size 0.85 .." and change "aluminium 15%, NC" to "aluminium 8%, NC"

As indicated in document -/C.3/R.543, in paragraph 15.5.2.5, replace the examples of results with the following:

Substance	Apparent density (kg/m^3)	Result
Ammonium nitrate/fuel oil (94/6)	795	–
Ammonium perchlorate (200 μm) */	1145	–
ANFO blasting agent (with low density combustible additive)	793	+
Emulsion blasting agent (sensitized with microballoons)	1166	–
Emulsion blasting agent (sensitized with NC)	1269	–
Emulsion blasting agent (sensitized with oil)	1339	–
NG dynamite */	900	+
PETN (wetted with 25% water) */	1033	+

*/ Used for calibration purposes - not for classification in Division 1.5."

In 15.6.1.2 (c), 15.6.1.3.1 and 15.6.1.3.2, delete "or unpackaged articles" and in 15.6.1.2(d) delete "or article".

In 15.6.1.3.4, change "7 m/s" to "6 m/s".

Add the following examples of results to 15.6.1.5

Substance	Result	
ANFO	–	
ANFO (with 6% Aluminium powder)		–
ANFO (with 6% combustible material)	–	
ANFO emulsion (with 1% microspheres)		–
ANFO emulsion (with 3.4% microspheres)		–

Section 16

In 16.1.1, for type 6 (a), insert "mass" before "explosion".

Replace the text in 16.2.3 by the following:

"16.2.3 If a substance gives a "–" result (no propagation of detonation) in the Series 1 type (a) test, the 6(a) test with a detonator may be waived. If a substance gives a "–" result (no or slow deflagration) in a Series 2 type (c) test, the 6(a) test with an igniter may be waived."

In 16.2.4, amend "sub-section 4.8" to read "the Glossary in Chapter 4".

Delete 16.3.2.

In 16.4.1.1, insert "mass" before "explosion".

Replace the text of 16.4.1.2 by:

"The following items are required:

(a) a detonator to initiate the substance or article;
(b) an igniter just sufficient to ensure ignition of the substance or article;
(c) suitable confining materials; and
(d) a sheet of 3.0 mm thick mild steel to act as a witness plate.

Blast measuring equipment may be used."

Replace the text of 16.4.1.3.2(c) by:

"Substances not intended for use as explosive, but provisionally accepted into Class 1, should be tested first with a standard detonator (Appendix 1) and, if no explosion occurs, with an igniter as in (b) above. If a substance gives a "–" result (no propagation of detonation) in the Series 1 type (a) test, the test with a detonator may be waived and if a substance gives a "–" result (no or slow deflagration) in a Series 2 type (c) test, the test with an igniter may be waived."

In 16.4.1.3.5, the second "should be" is deleted.

In 16.5.1.1 (twice), 16.5.1.3 (thrice) replace "non-packaged" by "unpackaged".

Replace the text for 16.5.1.2 by:

"The following items are required:

(a) a detonator to initiate the substance or article;
(b) an igniter just sufficient to ensure ignition of the substance or article;
(c) suitable confining materials; and
(d) a sheet of 3.0 mm thick mild steel to act as a witness plate.

Blast measuring equipment may be used."

In 16.5.1.7, the second "should be" is deleted.

Add a second sentence to 16.6.1.2(b) to read:

"If the volume of one package or unpackaged article is greater than 0.15 m^3, the competent authority may waive the requirement for three packages or unpackaged articles to be tested."

In 16.6.1.2(c), delete ", with apertures smaller than the articles (if any),".

Delete "(i)" and add a new sentence to read:

"Blast gauges, radiometers and associated recording equipment may also be used."

In 16.6.1.3.5, change "7 m/s" to "6 m/s".

In 16.6.1.3.6, delete "(e.g. cratering)", "(e.g. perforation or indentation of a witness screen)" and "(e.g. a fireball or jet of flame)".

In 16.6.1.4.1, delete "so to".

In 16.6.1.4.3(b) and (c), insert "edge of the" before "packages".

16.6.1.4.4(c), delete "more than one" and "and are still burning at this distance" and insert "edge of the" before "packages".

16.6.1.4.4(d), insert "edge of the" before "packages".

16.6.1.4.5(a), delete "more than 1 mm deep".

Section 17

Delete 17.3.4.

Replace the text in 17.4.1.4 by:

"The result is considered "+" and the substance should not be classified as an EIDS if in any trial:

(a) the witness plate is torn or otherwise penetrated (i.e. light is visible through the plate) - bulges, cracks or folds in the witness plate do not indicate cap sensitivity; or

(b) the centre of the lead cylinder is compressed from its initial length by an amount of 3.2 mm or greater.

Otherwise, the result is considered "–"."

Amend 17.5.1.2 (h) to read:

"Wood block, 95 mm diameter and 25 mm thick, with a hole drilled through the centre to hold the detonator."

In 17.5.1.5, delete the column headed "Charge density".

Annex B

AMENDMENTS TO DOCUMENT ST/SG/AC.10/C.3/R.475

Appendix 1

In figure A1.2, replace "0.035" by ", 0.089".

Appendix 3

In 1, change "METHOD FOR BAM..." to "GERMAN METHOD".

In 3, amend "to the test substance, in the reaction" to read "in the ratio".

Change the title to figure A3.1 to read "GERMAN METHOD OF CAVITATION".

Appendix 4

For CANADA, change "Belles" to "Bells".

For NETHERLANDS, change "TNO," to "TNO".

For UNITED KINGDOM, change "Explosion and Flame Laboratory" to "Health and Safety Laboratory".

Annex C

AMENDMENTS TO THE RECOMMENDATIONS

Preface

Replace the text given in paragraph 14 of the Preface by the text proposed in paragraph 2 of document -/C.3/R.476.

Chapter 1

Renumber paragraphs "1.9.2" and "1.9.3" to "1.9.3" and "1.9.4" respectively and insert the new paragraph 1.9.2 given in paragraph 3 of document -/C.3/R.476.

Chapter 3

In special provision 227, amend "by test 1 (a) (i) or test 1 (a) (ii)" to read "by the Series 1 type (a) test".

In Special Provision 241, amend "by the appropriate test methods and criteria" to read "by test types 1 (a), 2 (b) and 2 (c) respectively" and amend "with 14.5.2" to read "with 14.5.2 or test N.1 in the Recommendations: Tests and Criteria".

Chapter 4

In paragraph 4.2.1, renumber figures "1.2" and "1.3" to "10.2" and "10.3" respectively.

Amend paragraph 4.2.3 to read:

> "4.2.3 The competent authority which prescribes the definitive test method corresponding to each of the Test Types should specify the appropriate test criteria. Where there is international agreement on test criteria, the details are given in the publication referred to above describing the seven series of tests."

In paragraphs 4.4.1 and 4.4.3, amend "Figure 1.3" to read "Figure 10.3".